

CLAIMS

1. An expansion valve block for controlling or adjusting the pressure or the flow rate of a fluid,
5 comprising,
- a main body within which at least one internal fluid passage between at least one fluid inlet orifice and at least one fluid outlet orifice is formed,
- at least one fluid-pressure control means arranged on
10 at least part of said internal fluid passage, the internal fluid passage between said pressure control means and the fluid inlet orifice forming an upstream circuit and the internal fluid passage between said pressure control means and the fluid outlet orifice
15 forming a downstream circuit,
- at least one first fluid flow rate control means arranged on at least part of the downstream circuit,
- at least one second fluid flow rate control means arranged on at least part of the upstream circuit,
20 - at least one command means for causing a fluid to flow in the passage,
characterized in that the command means collaborates with the first and second fluid flow rate control means in such a way that, when the operator commands delivery
25 of a fluid in the passage, the opening of the upstream circuit by the second control means occurs before the opening of the downstream circuit by the first control means and, when the operator commands the stopping of the delivery of a fluid in the passage, closure of the
30 downstream circuit by the first control means occurs before closure of the upstream circuit by the second control means.
2. The block as claimed in claim 1, characterized in
35 that the second fluid flow rate control means arranged on at least part of the upstream circuit is a valve with an axially moving shutter.

3. The block as claimed in claim 1 or 2, characterized in that the first fluid flow rate control means arranged on at least part of the downstream circuit is a cylinder right through which a duct is
5 radially pierced, said cylinder body of the block being placed in a "hole" in the body.

4. The block as claimed in claims 2 or 3, characterized in that one of the bases of the cylinder
10 is the axially moving shutter of the second fluid control means arranged on at least part of the upstream circuit.

5. The block as claimed in one of claims 2 to 4, characterized in that the command means is a screw
15 collaborating with the cylinder/cylinder and the shutter in such a way that turning it simultaneously causes axial translational movement of the shutter and axial rotation of the cylinder.

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6. The block as claimed in claims 4 or 5, characterized in that the surface of the cylinder is covered with a material which provides sealing between the cylinder and the main body of the expansion valve
25 block.

7. The block as claimed in one of claims 4 to 6, characterized in that the base of the cylinder is hollowed out around its annular periphery and in that a
30 seal is positioned in this annulus.

8. The block as claimed in one of the preceding claims, characterized in that the pressure control means comprises at least one shutter and/or at least
35 one spring.

9. The block as claimed in one of claims 1 to 7, characterized in that the pressure control means comprises a pressure relieving screw or a cam acting on

at least one shutter.

10. The block as claimed in one of the preceding claims, characterized in that it comprises a moving
5 lever that can be manipulated by the operator between at least one fluid flow rate open and at least one fluid flow rate closed position, said lever acting on the command means.

10 11. A pressurized-fluid vessel, particularly a gas cylinder, equipped with an expansion valve block as claimed in one of claims 1 to 10.

12. A method for delivering a fluid in an expansion
15 valve block, said expansion valve block comprising an upstream circuit and a downstream circuit in which the pressure is below the pressure in the upstream circuit, characterized in that when the operator commands the delivery of fluid, the opening of the upstream circuit
20 occurs before the opening of the downstream circuit.

13. A method for stopping delivery of a fluid in an expansion valve block, said expansion valve block comprising an upstream circuit and a downstream circuit
25 in which the pressure is below the pressure in the upstream circuit, characterized in that when the operator commands the stopping of the delivery of the fluid, closure of the downstream circuit occurs before closure of the upstream circuit.